

# Firing Rooms at Kennedy Space Center



*On July 16, 2019, the 50th anniversary of the Apollo 11 launch to the Moon, launch team members from Apollo 11 and Artemis I mingled in Launch Control Center Firing Room 1. From left are John Tribe, Apollo 11 launch team member; Kennedy Space Center Director Bob Cabana; Artemis I Launch Director Charlie Blackwell-Thompson; Harrison Schmitt, Apollo 17 astronaut; Apollo 11 astronaut Michael Collins, with his daughters Ann (left) and Kate (right); and Kelvin Manning, associate director, technical.*

The firing rooms in the Launch Control Center, or LCC, at NASA's Kennedy Space Center in Florida are modernized, upgraded and ready to oversee launches and preparations of a new generation of rockets and spacecraft.

NASA's Exploration Ground Systems is managing the changes in the firing rooms. The effort is part of a centerwide refurbishment of launch systems and facilities originally developed for the Apollo Program and subsequently utilized in support of the Space Shuttle Program. Today's modernized firing rooms will again serve as the "brain" behind launch operations, this time for NASA's Orion spacecraft and Space Launch System (SLS) rocket, which form the backbone of the agency's plans to expand human exploration into the solar system with the Artemis program.

The firing rooms are the hub of the Spaceport Command and Control System at Kennedy. All activities involved in preparing rockets, spacecraft and payloads for flight can be controlled by engineers sitting at computer terminals in the firing rooms. Likewise, all activities at the launch pads can be run from a firing room.

Orion and SLS are not expected to require as many console operators as the shuttle. Instead, advances in computer and software systems will allow greater situational awareness by the launch team.

Firing Room 1, now known as the Young-Crippen Firing Room, has some of the most significant modernization of capabilities and will be the firing room used for the Artemis Launch Team.





*Charlie Blackwell-Thompson, left, launch director for Artemis I, and Jeremy Graeber, right, chief NASA test director, monitor activities during a formal terminal countdown simulation in Firing Room 1. This was the first in a series of simulations to help the team prepare for the launch of Artemis I, the uncrewed first flight of the Space Launch System rocket and Orion spacecraft.*

The new concept for the firing rooms includes changes to the configuration and use of individual work stations. Previously, a console was connected to an exclusive set of hardware and software, tailoring it for a single use. New capabilities make it possible for console operators to use consoles for many roles. Engineers will be able to sit at any console and access their desired networks.

This approach represents a new model of flexibility within the LCC, which last went through major adjustments ahead of the launch of the first space shuttle mission on April 12, 1981.

Launch Team console operators at Kennedy are conducting a series of countdown simulations to help the team prepare for the launch of Artemis I, the uncrewed first flight of the SLS rocket and Orion spacecraft.

Firing Rooms 2 and 3 are software-focused. Firing Room 3 has been repurposed for use as a software design and development environment focused on software required to operate and control ground and flight hardware. Firing Room 2 has been modified to support software verification and validation testing, simulation support, and to serve as the location for Support Launch Team personnel for Artemis missions on launch day.

Firing Room 4, which was used as a large conference room when the LCC was built, was extensively remodeled in 2006 and was used for processing and launch of the final shuttle missions. Firing Room 4 has been repurposed to serve as a Multi-



*Personnel with NASA's Exploration Ground Systems and Jacobs Test and Operations Contract monitor activities during a formal Artemis I terminal countdown simulation in Firing Room 1.*

User Spaceport-capable firing room, allowing users across the spaceport to take advantage of this unique capability.

The modifications made in the firing rooms will enable the facility to play a significant and adaptable role in the operations of future rockets and spacecraft for NASA and private companies as new strides are made into space.

## More information online

For more information on Exploration Ground Systems, go to <http://www.nasa.gov/egs>

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